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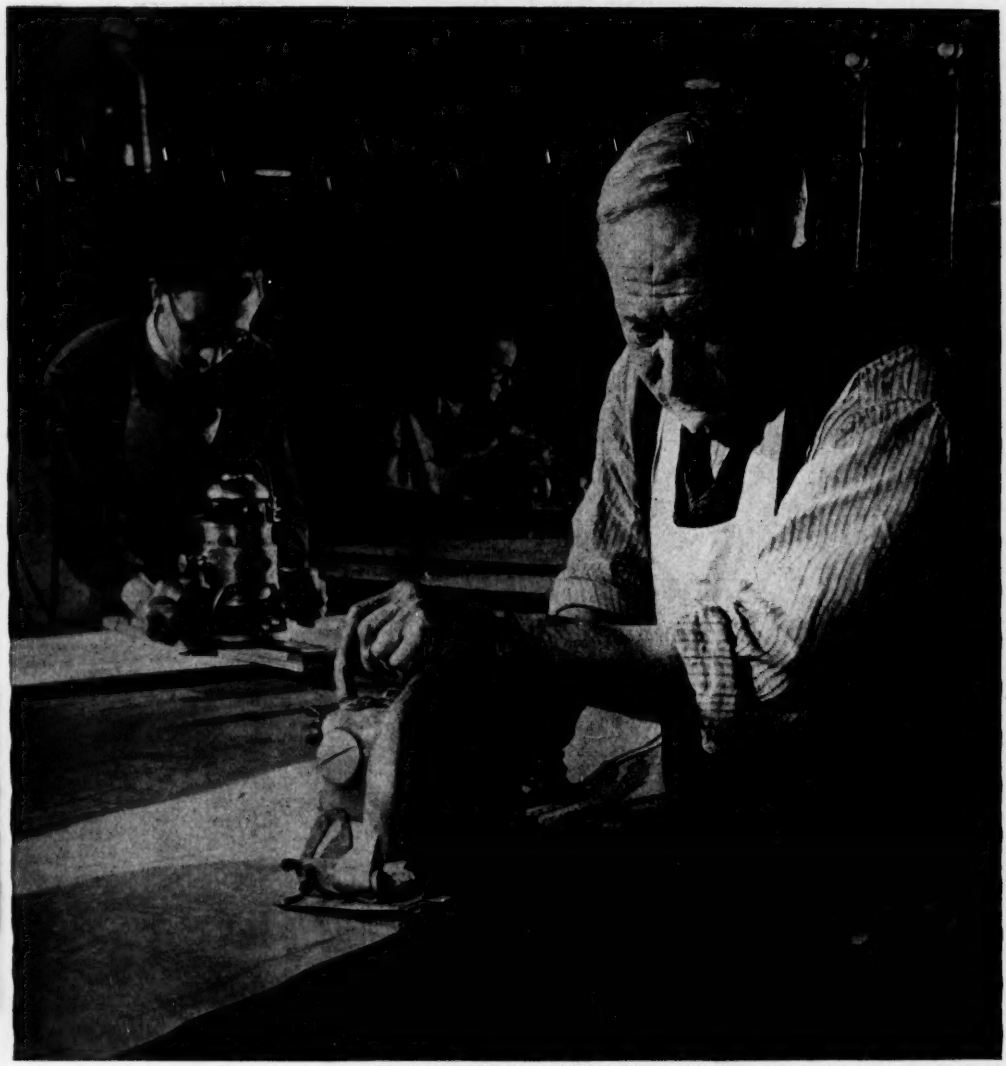

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CONTENTS

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NOTES AND COMMENTS

Toronto—Rival Mining Financial Centre to London?

The applications to the Treasury by Johannesburg Consolidated Investment and Wankie Colliery, to obtain permission to transfer their seats of control to Rhodesia and South Africa serve as a painful reminder that a bad taxation system drives out good money. Although both of these companies may rest their case for transfer of domicile on grounds of administrative convenience, basically the chief factor driving them away from these shores is the familiar one of shareholders and company directors rebelling against the absorption by the Exchequer of a disproportionate amount of their annual earnings. The loss to this country—which cannot be evaluated in terms of pounds, shillings and pence alone—should large-scale company emigration develop is too well known to readers of *The Mining Journal* to need recapitulation.

The only solution devised by the late Government to meet the company emigration problem was to create a ring fence round this island, by the introduction of the Finance Bill which forbade emigration whenever such a move involved a loss of revenue to the Treasury. This legislative action brought the exodus to a standstill but it did nothing to attack the root of the problem. On the other hand, the present Government having strongly opposed the Finance Bill would now appear to be in a difficult position to find reasonable grounds to prevent their leaving this country.

The anxiety with which the City views the emigration of mining companies to South Africa, Rhodesia, Australia and elsewhere, is not, unfortunately, shared by the public and the politicians at Westminster. This is due, possibly, to their belief that although the bodies have gone their leadership still resides in the U.K., that they are still in the Sterling Area and largely dependent on London for the financing of their mining industries. Such reflections may help to justify taxation efficiency, but they do little for London's reputation as a world centre of mining finance. Additionally, it can be said that such reasoning also obscures the long term implications of the greater participation of American and Canadian capital in the British overseas mining industry.

At first sight, it may appear that Canada with its tremendous expansion schemes calling for vast amounts of capital, could hardly be expected to be considered as a serious contender for London's position as the world centre of mining finance. But her rise towards leadership among the mining countries of the world cannot be denied, nor can her experience and ability to develop and successfully operate large scale mining ventures be dismissed as of no account. If her own capital resources at the present time are inadequate to support world-wide mining operations, the fact that Canada's currency is one of the strongest in the world, that her money can now be sent anywhere free of restrictions and that investors in the U.S.A. have never fought shy of the Canadian mining markets goes a long way towards overcoming this shortcoming.

Toronto has always been the centre of Canadian mining finance and while its national prominence in this capacity is well known, its progress towards world recognition, if slow, has been nonetheless steady. Companies at present registered in Toronto whose activities are world wide include Ventures whose interests range over the U.S., Central and South America, Norway, Greece, Africa and the Philippines and Frobisher's, whose interests are also world wide. Furthermore, these two companies have recently acquired an interest in a lead-zinc operation in Greenland and in an iron venture in French West Africa. Anglo-Huronian, which originated in London, is another Toronto registered mining company which maintains important assets in other countries. The Patino interests, while not directly engaged in Canadian mining, have always kept the door open with the retention of their Canadian office to facilitate participation in financing mining ventures. Noranda, Nipissing, and to a lesser extent Dome and McIntyre-Porcupine are other Toronto mining companies whose interests go well beyond the boundaries of the Dominion.

Perhaps, too, a sign of which way the wind is blowing, may be seen from the recent registration in Toronto of Rhodesian-Asbestos Ltd., further details of which are given elsewhere in this issue.

Rhodesian-Asbestos is a new company formed by Anglo-Huronian, Johns-Manville, British Metal Corporation, Southern Minerals & Marketing Corporation and the Patino Tin Interests. With such an impressive array of sponsors, the headquarters of the new company might with

good reason have been in London with British Metal Corporation, in New York with Johns-Manville, in Johannesburg with Southern Minerals, in Paris with Patino, or finally, in Toronto with Anglo-Huronian. The fact that the new company will have its headquarters in Toronto is therefore significant, particularly so as both the Johns-Manville Corporation and the British Metal Corporation hold a greater interest in the new company.

It is, of course, true that one swallow does not make a summer, but on the other hand it must be assumed that considerable thought was given to the various alternatives open to the interested parties before the final choice of domicile was decided upon. Certainly the burden of taxation will be much lighter in Toronto than in London, which factor might have played an important part in determining the final result.

While the foregoing note is not meant to herald the arrival of a new mining financial centre in opposition to London, it does give more point to the fears expressed in the City that unless and until the anomalies of our present taxation code, relating to the British overseas mining industry, have been ironed out there is little inducement for new companies to register in this country and thereby maintain London's supremacy as the centre of world mining finance.

The World Silver Market in 1951

According to the *Annual Review of the Silver Market*, compiled by Handy & Harman, the well-known New York firm of fabricators of precious metals, the general pattern of the principal world silver markets did not change much during 1951 as compared with the previous year. The price increases in most commodities which resulted from the Korean war were more extreme than the relatively modest increase in the price of silver. While quotations rose sharply at the beginning of the year under review, buyers were never faced with acute problems of supply, such as existed in other non-ferrous metals. The wave of scare buying following the Korean war created an unusually heavy demand for sterling silver and an accumulation of orders resulted in full-scale production by manufacturers for the balance of 1950, and for the first four months of last year. Requirements for sterling silver then dropped sharply and remained on the whole at relatively low levels for the rest of the year. However, a general increase in the consumption of silver for industrial purposes offset this loss to some extent. In spite of this marked falling off in demand, the company estimates that approximately 110,000,000 oz. of silver were consumed in the arts and industries in the United States during 1951, a figure which is 10,000,000 oz. below 1950, but which compares favourably with other post-war years.

Regarding prospects for this year, the authors of this report state that basic factors in the outlook for silver over the foreseeable future point to its price stability. Unless trade demands in the United States should decline permanently below current levels and assuming continued buying by the Bank of Mexico, any important decline below the 88c. level seems unlikely. While the future policies of Mexico cannot, of course, be predicted, the report suggests that "it appears probable that the Bank [of Mexico] will continue to be a buyer of Mexican production."

On the other hand, the authors are confident that in the event of an increase in the present low rate of demand which might result from higher defence spending, and from the use of silver as a substitute for scarce metals, there is no apparent reason to fear that adequate supplies would not be available.

Concluding, they believe that fluctuations in the silver price will continue to be relatively narrow, with a ceiling provided by the availability of U.S. production now sold to the Mint at 90½c. per f.oz., and the support provided by Mexico's probable need for at least a major portion of its own production over the current months.

The report estimates production in the Western Hemisphere as 130,700,000 oz., about 7 per cent less than in 1950. The sharpest decrease is said to have taken place in Mexico, output of which country probably did not exceed 41,000,000 oz., compared with 49,100,000 oz. in 1950. U.S. output was also lower at an estimated 40,000,000 oz., against 42,100,000 oz. in 1950. On the other hand, Canada, with an output of 23,000,000 oz., registered a slight gain; the same is true of Bolivia with 6,700,000 oz., but Peru's production remained unchanged at 13,500,000 oz. All of the South and Central American countries together are estimated to have produced about 6,500,000 oz.—about 6 per cent less than previously.

Australia was the principal producer outside the Western Hemisphere and, according to estimates received by the company, this Dominion produced again about 10,500,000 oz., as in 1950. Putting total production outside the Western Hemisphere at about 24,500,000 oz., total world production, during 1951, at least on a partial basis, would appear to have amounted to approximately 155,800,000 oz.

The New York price continued to represent the basis for most international transactions and considering the inflationary pressures exerted on prices in the U.S. during the early part of 1951, the price of silver in New York showed remarkable stability.

Italy's Coal Industry Reviewed

Italy's domestic production of coal and lignite was abnormally increased during the war to meet the dearth of imported coal. With the revival of large-scale imports of coal, which is more suitable for industrial use, the production of these industries has languished and a critical situation has developed. Before the war, Italy imported 12,000,000 tonnes of coal annually out of a total requirement of about 15,000,000 tonnes. The remainder was supplied by domestic production, of which very little was used industrially. The main domestic sources were the Arsa coal-mines in Istria (whose maximum production in 1942 of 1,200,000 tonnes was the equivalent of about 900,000 tonnes of good bituminous coal), and the Sulcis coal-mines in Sardinia, whose production was raised from 466,000 tonnes in 1938 to a maximum of just over 1,100,000 tonnes in 1942. In addition, production of lignite mines, principally in Tuscany and Sicily, was increased to an annual production of over 2,000,000 tonnes during the war. The situation after the war was considerably changed by the loss of the Arsa mines to Yugoslavia, but the production of Sardinian coal by 1947 was not far short of the total production of both the Sardinian and Istrian mines together in 1938. With the increasing availability of electric power, foreign coal, and oil, demand for Sardinian coal has fallen off, however, and production in 1949 at just over 1,000,000 tonnes was actually below the 1942 level. But plans exist for increasing this to as high a figure as 3,000,000 tonnes a year.

In 1950, Italy imported 8,340,000 tonnes of coal (8,736,000 tonnes in 1949) of which 3,494,000 tonnes (1,691,000 tonnes) came from Germany, 1,687,000 tonnes (980,000 tonnes) from the U.K., and 1,035,000 tonnes (289,000 tonnes) from Belgium-Luxembourg. In fact, imports of coal accounted for about 11 per cent of the total value of Italy's imports in both 1948 and 1949 and for 9 per cent in 1950. By then availability of coal in the U.K., Germany, and Belgium enabled Italy to put an end to imports of coal from the U.S.A., but at the end of this year, the European shortage made it clear that recourse would have to be made once again to dollar supplies.

Canada

(From Our Own Correspondent)

Cobalt, January 9

Mineral production in Canada continued its upward rise throughout 1951. Preliminary tabulation of statistics prepared at Ottawa reveal impressive details. Value of production for the year reached $1,228,005,479 compared with $1,045,450,073 in 1950 and $901,110,026 in 1949.

RISING COSTS REDUCE GOLD PRODUCERS

In all branches of the industry the outlook is that further growth will take place in 1952—the one main exception being that of gold mining. While the value of gold output in 1951 exceeded that of any other metal, the year witnessed the closing down of six producers. Moreover, the outlook is that a further three or four gold producers may suspend output before the end of 1952—and there are no new producers in prospect of being established. The reason for this slowing tempo of interest in gold mining is the continued rise in cost of operations. Unless or until the world demand for gold causes the value of metal to rise substantially or, alternatively, economic changes bring about a reduction in the cost of labour, transportation and supplies, the gold mining industry in Canada may be expected to surrender the leading position it now holds, and helplessly watch nickel, copper and petroleum go racing past to greater records than it is possible for it to maintain owing to the heavy handicap it bears.

It is a matter of serious concern among Canadian pioneers that interest in gold mining is on the wane at this time. It has long been recognized that the search for gold in the unexplored areas of this country has been instrumental in blazing the new trails. But with reduced incentive to search for gold, progress in the remote areas will be lessened. One bright spot, however, is the success which is attending the efforts of Giant Yellowknife in the Northwest Territories. Despite the handicaps associated with gold mining in that remote territory, Giant Yellowknife has established gold production at a rate of more than $1,000,000 every three months. Current operations are on a basis of 400 tons of ore daily. Within a few months this will be increased to about 700 tons per day. Tentative provision is being made for mining 1,000 tons daily in due time—and with expansion beyond that rate to be determined by the trend of underground development. Sufficient is known already to classify Giant Yellowknife as a gold producing enterprise of considerable magnitude. This fact is of incalculable benefit to the future of a vast area—maintaining a vigorous and pioneer-minded community right in the heart of an extensive area which might otherwise have remained wild and dormant—and scarcely ever feeling the footsteps of curious men.

COBALT PRODUCTION ENCOURAGED

The Canadian Government has raised the price of cobalt with the object in view of encouraging greater production. A price of $2.00 per lb. is to be paid for the metal when contained in concentrates averaging 10 per cent or better. This compares with a price of $1.40 per lb. recently prevailing. The new price is guaranteed until such time as 600,000 lb. of the metal has been accumulated, or until March 1, 1954, whichever event occurs first. This development has aroused additional interest in the old mine workings of the Cobalt, Gowganda, Elk Lake, and South Lorrain silver-cobalt field of Ontario.

Security regulations render it necessary to shroud details associated with the development of pitchblende ores in the Beaverlodge Lake area of Saskatchewan. However, the government-owned Eldorado Mining & Refining (1944) Ltd. is proceeding with the outlay of $8,000,000 on development and equipment. The entire outlay is being financed out of company earnings—and the outlook is that the company will end up with more than one new profitable producer of uranium. Secrecy as to current production, ore reserves, etc., continue to surround the uranium mining industry, but there are indications that the time is fast approaching when the government may allow more information to reach the public and that when the value of uranium output can be announced, it may comprise an impressive supplement to the statistical record of Canada's mineral production.

ALBERTA'S EXPANDING OIL PRODUCTION

An outstanding feature of progress in 1951 was the production of 48,000,000 bbl. of petroleum, compared with 29,000,000 bbl. in the preceding year. As a result of this rise in petroleum production in the province of Alberta, that province now occupies third place among the mineral producing sections of Canada. Unchallenged was the province of Ontario with an output of $437,085,000 in 1951 or 35.6 per cent of the Canadian total. Second in line was Quebec with $249,553,000 or 20.3 per cent. Alberta came third with $173,230,000 or 14.2 per cent, closely followed by British Columbia with $168,293,000 or 13.7 per cent.

Immediate steps are being taken at Washington and Ottawa to set up seaway power project committees designed to carry on detailed discussions and arrangements for the construction of an all-Canadian deep sea waterway from the Atlantic to the Great Lakes. The object is to plan the project to the stage where the commencement of work would only require approval of the president of the United States on the one hand and the Canadian Government on the other. Meanwhile, there is still a possibility that the U.S. Congress may itself, decide upon the United States making the project a joint undertaking between Canada and the United States. Nevertheless, should Congress continue to oppose the undertaking, the steps now being taken will open the way for Canada to proceed with the task alone.

POWER DEVELOPMENT IN 1951

Keeping pace with the expansion of general industrial activity throughout Canada, and the consequent need for large additional amounts of electrical power, construction of power plants proceeded vigorously in 1951. The Minister of Resources and Development, Mr. Robert H. Winters, in a review of hydro-electric progress in Canada in 1951, said that in conformity with the usual pattern of power development in Canada, a large part of this power-plant construction was comprised of hydro-electric installations. A number of thermal units of large capacity were also brought into operation, and others were under construction.

Construction of electrical plants was active in all provinces, but in the amount of new hydro-electric capacity coming into operation in 1951, the Province of Quebec was outstanding with a total of 461,700 h.p.

One striking feature of new developments under way in 1951 was the number that were located in sparsely settled regions with the power to be used in the immediate area.

A total of 881,250 h.p. of new hydro-electric capacity was brought into operation in 1951 and, allowing for the dismantling of several old plants, the total installed capacity of water wheels and turbines in Canada is now listed at 13,340,774 h.p. This represents about 24 per cent of known resources. New plants and extensions to existing stations which are under construction for operation in 1952-53 total more than 1,700,000 h.p., and approximately the same amount is under preliminary construction or is definitely planned for operation in 1954-55.

Refining Nickel Matte

By C. C. DOWNIE

The production and handling of nickel matte in blast furnace and converter appear to have been somewhat sparsely dealt with in so far as garnierite and nickel silicate ores generally are concerned.

Much, if not most, of the information on the *modus operandi* appears to have been gathered from earlier practice, or alternatively, from the associated handling of Sudbury magnetic pyrites or at least from copper-bearing nickel materials. Where no copper, or not more than a few points per cent of copper exist, the behaviour of the matte in the converter differs quite markedly in respect of controlling working conditions, at the conclusion of the "blow." While some of the richer garnierites originally contained up to 10 per cent nickel and later fell to 7 per cent, the copper content ultimately ranged from 0.1 to 0.2 per cent, and sometimes less. The work of fluxing the ores initially for the blast-furnace smelting benefited by the fact that one smeltery originally possessed 13 small blast furnaces, eleven of 10 tons daily capacity, and two of 20 tons daily capacity. This layout afforded great opportunity for experimentation without involving excessive expenditure as the individual charges worked were relatively small. The procedure had to be changed from time to time as the need arose and while a straight run of ore parcels permitted a regular routine of fluxing to obtain, this had, of course, to be altered when a fresh consignment from other quarters had to be dealt with. So far as blowing the blast-furnaces was concerned, a steady uniform blast sufficed, except for "blowing-in" and closing stages, with another range for matte-refining, but the same could not be said of converter practice, where a closely controlled blast assisted not only in following the different stages of iron removal, but of detecting when the conclusion had been reached.

BENEFITS OF RESEARCH AND EXPERIMENTATION

The ores were first crushed, and finely pulverized in Krupp ball mills and conveyed by a conveyor system to a shed adjoining the briquetting house. As the shipped ore, hailing from distant parts, was dumped in the open and amounted to many thousands of tons exposed, sometimes continually to the rain, the moisture content became very variable—a matter of no small importance in respect of briquette making. For this reason, one-half of the ore to be briquetted was dried in capacious calciners, while the other half remained damp and thus offered a means of selection as the one was mixed with the other in known proportions. The damp and dry proportions were spread out on the floor of the shed (which was stone-flagged and covered with a cement lining) and to which were added the specific fluxing agents. The sulphur addition took the form of gypsum, salt-cake, and alkali waste, while barytes was less frequently used than appears to have been common elsewhere.

Some indication of the benefits gained by continual research and experimentation in fluxing conditions will be revealed by the fact that some charges for briquetting were made up of 10 tons ore (7 per cent nickel), 10 cwt. coal, 5 cwt. lime, and 15 cwt. alkali waste. Compared with the charges containing salt-cake, and barytes, the costs were trifling, and yet sufficed to render the high magnesite-containing material quite fluid when ultimately smelted. Other rich chromium-bearing nickel ores were much too refractory to be dealt with in this highly economical manner.

BRIQUETTES FOR THE BLAST-FURNACE

After mixing the charge on the floor intimately, it was transferred to a set of six pan-mills, each of which was connected by independent elevator to six corresponding briquetting presses, laid out in lines parallel to each other. The pressure applied to the briquetting presses had to be varied as required, but averaged 25 lb. per sq. in. to produce 80 briquettes per minute, with an expenditure of 8 h.p. As a result of initial control of the moisture content, no final drying of the briquettes was necessary, but earlier drying on hot flues, and special steam chest arrangements, had been tried for some time. (The arrangement of each unit is that the pan mill has a small bucket elevator which upraises the mixed and pulverized mass to a platform, or "loft" above each briquetting press, and from thence it is passed by way of hopper to the charging mouth of the press, while trucks stand at the side for filling and moving away by hand.) The moisture content was considered to be of paramount importance in obviating the need for final drying of the briquettes and, depending on the class of ore handled, ranged from 2.5 to 5 per cent. The briquettes are then charged into the blast furnace, together with coke in the proportion of 32 cwt. briquettes to 9 cwt. coke. Until the largest blast-furnaces were put into commission, the briquettes were manually handled, but once the 200 ton daily capacity furnace was used, it became necessary to push out the briquettes automatically to save time and labour. This large design had a hearth area of 73.3 sq. ft., an ore column height of 14 ft., and 23 water jackets arranged in two tiers one above the other The output of this furnace amounted to some 50 tons matte per 24 hour day maximum, although another 100 ton furnace could rarely exceed 20 tons, i.e., averaging less than 1 ton matte per hour. As a rule, five tappings of matte were made per shift of 12 hours, and with good working, the converter operation could be completed within two hours ready for the next tapping to be handled, without having to resort to the spare converter. With any hold-up of refining in the converter, the spare converter, which was kept at hand in heated condition, was ready for immediate use.

BLOWING ARRANGEMENTS FOR THE CONVERTER

It was soon realized that to make a good job of blowing during this refining, the blast required a control quite unknown to the blast-furnace, and every effort was made to get best results from the blowing unit. After exhaustive investigations, electrically driven units were found to give less dependable results than could be got from steam engine blowers.

Many of the blowers for the small blast-furnace mentioned were the usual electrically driven models, but the reciprocating steam-engine could have the capacity increased at any time, and introduced quite a large engineering problem. Provisions were made in the flywheel and shaft for alterations, as converters of different capacities, and requiring different pressures, had to be contended with.

The engines had cylinders of 16 and 26 in. diameters, with air cylinders of 33 in. diameter, and a 36 in. stroke, and this outfit was later arranged with compound steam cylinders. The capacity of the engine (volume swept) was 2,650 cu. ft. per minute, with a volumetric efficiency of 95 per cent, and with an indicated horse power of 125, and 90 per cent efficiency. Speed was maintained at

75 r.p.m. with a steam pressure of 120 lb. per sq. in., 25 in. vacuum, and an air pressure of 12 lb. per sq. in. By substituting compound steam cylinders, with high-pressure cylinder of 12 in., low pressure cylinder of 19 in., and duplex air cylinders of 24 in. diameters respectively, this could be speeded-up to 150 r.p.m. and the output increased to 3,400 cu. ft. of air per minute.

A lengthy account of this arrangement would enter into purely engineering aspects, but the advantages were, briefly, that the refining of the matte could get any desired number of cu. ft. of air at known pressure without delay, and totally independent of any restrictions in outside current supplies. This latter matter, with the smaller electrically driven blowers, caused no little concern, as in one extreme instance, the molten matte was allowed to partially solidify in the converter and had to be tapped in unfinished condition. According to one report, the surface of the matte, as tapped from the blast-furnace, should be some 30 in. above the tuyere level, starting with a pressure of 5 lb. per sq. in, and finishing about 7 lb. per sq. in.

In the smeltery described above, the charge level was rarely allowed to increase much beyond 14 in., and the minimum air pressure even then was never allowed to fall below 4½ lb. per sq. in. When with more experience the charge was increased to a depth of approximately 16 in., the air pressure was increased to 6.4 lb. per sq. in. Although some 500 cu. ft. of air was allowed per ton of matte, this was the average figure with good working, and not too excessive toppings. It was also found that where charges rich in chromium, and difficult to handle in the blast-furnace, did not permit of consistent tappings, the fresh matte could be incorporated in the partially refined material in the converter, by stopping the process temporarily. Suggestions that this could cause explosions were found to be without foundation, but, of course, the amount of toppings could increase the depth beyond the 20 in. maximum which was usually established.

NOTES ON CONVERTER PRACTICE

In practice, altogether six skimmings are taken off normally, and following skimming, fresh salt-cake mixture is added about every 15 to 20 minutes until the charge is finished. When the "blow" is first commenced, with the converter tilted to the desired angle, although agitation can be very violent, this action is accompanied by little or no evidence of flame; however, this depends, to some extent, on the amount of iron present. In this works, the Bessemer type of converter, with five main blast tuyeres located in the bottom, was preferred. This bottom was 15 in. thick, while the sides were 6 in. thick, lined with specially selected Austrian ganister, and the whole was tilted from trunnions from a lengthy shafted control wheel.

The turbulent stage is followed by the fuming stage, which usually permits of an increased air pressure, in which fumes have to be got rid of to ensure that all iron has been appropriately oxidized. The disappearance of the fumes leaving a transparent flame, tinged a greenish shade, indicates that the blow is near completion. Although descriptions of the colour of the fumes and flame have already appeared, it is important to note that control of the refining, and of the exact application of air pressure, also depend on the colour and appearance of the slag. This entirely differs from what it appears like with cupro-nickel matte, as the copper exerts no small influence alike on colour, texture, and general characteristics of the slag. Converter treatment with the foregoing capacities and sizes has been known to exceed 2½ hours, and can cause the spare converter to be utilized, in view of what is being tapped from the blast-furnace.

For many years, the salt-cake mixture was put in from a long-handled shovel at fixed intervals, but an automatic arrangement was later fixed, comprising a measuring device with hopper and lengthy chute, which was lowered to empty its contents when required. In the early stages, the slag which comes off is black and the converter attendant follows this closely as it changes to a chocolate-brown colour, which shows that the charge is nearly finished. When nearing completion, the slag also takes the form of curly-like balls. Apart from the colour and transparency of the flame showing an indication that the refining is near an end, more importance is given to watching this chocolate-brown colour changing over to green, when the charge is ready for tapping.

OVER-BLOWING NOT A CAUSE FOR ANXIETY

It has been erroneously stated before now that there are no certain indications when the blow is over, and that while any under-blowing would render the matte too poor for the next operation, any over-blowing would slag the nickel. While it is true that under-blowing could leave iron in the matte, over-blowing, so long as it does not cause any solidification of the matte, need not cause any undue anxiety. The slags being rich in nickel have to be returned to a small blast-furnace in any case, and hence a slightly over-blown matte is preferable to an under-blown composition. The reactions in the converter are quite definite and pronounced, and can be easily controlled with experience. After the final slag has been skimmed off, the refined matte is poured into lengthy moulds, six ingots of which are, as a rule, obtained per charge. The size of these moulds is 56 in. by 17 in. by 5 in. deep, giving a capacity of 4,760 cu. in. The matte, after cooling, is broken in jaw-breakers, as it is exceedingly hard, and then pulverized ready for the next operation of roasting. Although this refined matte is supposed to contain 70 per cent nickel, with the remainder sulphur, there is almost invariably 0.1 per cent copper, unless lavish additions of salt-cake are made, together with from 0.1 to 0.15 per cent iron. Where the nickel content of the blast matte is unduly low, it is sometimes increased by additions of purchased nickel pellets from the carbonyl process, these additions being made when the matte is passed to the converter.

Pipeline to Pump Concentrates

The International Nickel Co. of Canada has recently completed a 7½ mile pipeline through which the bulk concentrate from 3,650,000 tons of nickel-copper ore will be pumped annually from its newly built Creighton concentrator to its reduction plant at Copper Cliff.

This new pipeline—a part of I.N.C.O.'s $130,000,000 underground expansion programme—forms the centrepiece of an elaborate system of pipelines which also carries tailings from both Creighton and Copper Cliff to a disposal area situated midway between the two plants. The system involved the building of 12 miles of trestle, which at selected points is 65 ft. high, to give an incline to and from each of the five relay pumping stations, thereby ensuring that the pipelines will be self-draining in the event of a power failure.

Some idea of the utility of the new system can be seen from the fact that a daily milling of 10,000 tons of copper-ore produces 1,800 tons of concentrate and 8,200 tons of tailings and when water is added to the concentrate the resultant pulp flows through the pipeline at a rate of 800 gallons per minute while the tailing pulp flows through at the rate of 2,500 gallons per minute.

It is said that the pipeline not only reduces the time required to transform nickel ore into refined nickel but also plays a large part in reducing costs which in turn makes it possible to work lower grade ore at Creighton.

Mining Activities in Cornwall During 1951

Although considerable damage was caused at South Crofty by water and fire at the beginning of last year, all in all, the Cornish tin industry can look over its shoulder at 1951 with a good deal of satisfaction.

THE COUNTY'S MAJOR TRIUMPH

Perhaps the county's major triumph was the success achieved by the Cornish Mining Development Association in bringing the subject of the development of Cornwall's mineral resources into the arena of practical politics. Mr. R. R. Stokes, Minister of Materials in the former Socialist Government, met a deputation from the Association last September, in Cornwall, and though the ensuing talks were not made public, it is understood that he promised the help of his Ministry in obtaining plant and supplies to increase production.

Assuming therefore that the speech by Mr. R. A. Butler at a Conservative Rally at Pendarves, Camborne, at the beginning of September, and reported in our issue of September 14 last, represents the policy of the Conservative Government, Cornwall has good reason to believe that all that can be done, within reasonable bounds, to encourage the county's mineral development will be done. At that date, Mr. Butler said that the Conservatives intended to revise and alter the Town and Country Planning regulations with the object of encouraging development, thereby hoping to foster and attract risk capital to the Cornish mines. Further, he stated that the Conservatives were of the opinion that the proposals contained in the Westwood Report on non-ferrous metalliferous mining in this country, should be carried out.

Just how far these words will be translated into deeds may ultimately emerge from the Association's talks with Viscount Swinton, Chancellor of the Duchy of Lancaster, at the Treasury on Tuesday of last week.

CORNWALL'S ROLE IN PRESENT CRISIS

The purpose of the conference was to discuss what further contributions the mining industries in Cornwall and Devon could make to relieve the present shortages of non-ferrous metals. After the conference, Mr. L. A. Harvey, Hon. Parliamentary Secretary to the Cornish Mining Development Association, stated the case for the Cornish mining industry when he said that any increase in the output of U.K. supplies of non-ferrous metals would enable this country to reduce its imports of tin from Malaya thereby leaving more tin to be sent to America to earn dollars. Continuing, Mr. Harvey succinctly dealt with the twin evils besetting the Cornish mining industry—taxation and capital—both of which factors he found to be inseparably linked. To tax a high risk industry like mining for tin, and other non-ferrous metals at depths, he said, on the same basis as is applied to low-risk industries makes it quite impossible to attract the large amount of additional capital required for large scale development.

It is expected that a statement will be made in the House of Commons as a result of the conference.

Other important developments during the past year were the attraction of capital, some of it from overseas, to the Hilary, Tregurtha Downs and Godolphin-hill area where it is hoped to uncover rich tin deposits at shallow depths and the investigations carried out by several London mining houses into the mineral potentialities of Cornwall.

While Cornwall's "producers" are well enough established to justify the comment that mining is still the county's oldest and most remunerative industry, the long hoped for mining expansion can only come by the addition of new mines and this prospect depends on whether current investigations bear fruit or not.

Meantime, South Crofty and Geevor are steadily forging ahead. The New Consols mine on the Devon border continues to produce small amounts of tin and good progress has been achieved with its dewatering scheme making increased production, given the labour supplies, a possibility during the current year. Wolfram mining at Castle-an-Dinas in conjunction with South Crofty is still on a small scale but it is understood that exploration work has been going on for some time in the Bodmin Moor and Pendeen District.

LABOUR DIFFICULTIES BEING OVERCOME

An offshoot of tin production which has attracted increasing attention among small operators during the year was the forming of small companies to treat tin from waste mining dumps. At Carn Brea a company has been working over waste dumps in the area for several months; another company is treating the tin bearing sands at Gwithian, while recently, work has begun at Balswidden, St. Just, to extract tin and other non-ferrous metals from waste heaps and mining dumps. This latter enterprise is being undertaken by a newly formed company, Tin Recovery, Ltd.

The labour supply position is one of the biggest factors influencing decisions as to whether existing mines can expand their production, or whether new mines can be opened up. In this connection, it may be recalled that the Cornish Mining Development Association concluded negotiations with the Ministry of Labour for the importation of Italian miners from Sardinia last August. The arrival of these men has, however, been held up since that date for lack of accommodation but this difficulty is now well on its way to being overcome, and South Crofty representatives are preparing to embark for Sardinia next month to screen those Sardinian iron miners who wish to come and work underground in Cornish mines.

HOLMAN-CLIMAX MERGER

Just before the Old Year faded out, Holman Bros. made an announcement which was as important to Cornwall, as it was to the makers of mining machinery. This was the statement that they had acquired an interest in Climax Rock Drill Engineering Works, with a view to utilizing the combined productive capacity of the two companies. How far and to what extent the merger foreshadows the disappearance of some of the individual products, formerly produced separately, is not yet known. But in one official notice it was said that the two companies would continue to sell their respective products though, naturally, there would be rationalization of the sales organization and of certain selling lines. In consequence of the acquisition, Mr. A. T. Holman, Chairman and Managing Director, and Mr. P. M. Holman, Joint Managing Director, of Holman Bros., have been appointed to the board of Climax Rock Drill and Engineering Works. This was the second important pronouncement from Holman Bros., during 1951, for earlier in the year, they had announced their decision to take over the foundry buildings of the Bartle Foundry. Subsequently this was followed by the news that British Insulated Callender's Cables were also moving into the Camborne-Redruth area and would take over the remainder of Bartle's, although its works would be centred round a factory at Redruth.

The Diamond Industry in 1950—II

By DR. W. F. FOSHAG and DR. G. S. SWITZER

The following article concludes the abridgment of the 26th Annual Report on the Diamond Industry in 1950 compiled by the Curator, and Associate Curator, Division of Mineralogy and Petrology of the Smithsonian Institution, Washington, and published by *The Jewelers' Circular—Keystone*. The first article appeared in our issue of January 18.

A successful innovation in diamond recovery, based on heavy medium separation, has been introduced at the Premier Mine. This has proved so successful that it will undoubtedly be adopted at other plants. The heavy medium plant at the Premier Mine began early in 1950. Four cones, each with its auxiliary equipment, have been installed and have a combined capacity of 320,000 loads of blue ground per month or about 80 per cent of the feed. The heavy medium used is ferrosilicon milled to 40 per cent minus 325 mesh. Blue ground crushed to ¾ in. to plus 10 mesh is concentrated in the heavy medium equipment, while the minus 10 mesh is concentrated on jigs. The concentrates of both are treated on the usual grease tables. Diamond recovery by this method is 95 per cent of the diamond content of the blue ground, compared to about 80 per cent by the old method.

The familiar grease tables at the Kimberlite plants, and hand sorting at the alluvial mines have been the standard practices in the final recovery of the diamonds from the concentrates. Tests on the recovery of diamonds by electrostatic separation have shown that successful recovery of diamonds is entirely practical in machines of conventional design with excellent results. Equipment of this type is now in operation at the Jagersfontein mine, resulting in greater efficiency and recovery, particularly of small stones. Since many alluvial diamonds do not have the desirable property of adhering to the grease tables, the hand sorting of the concentrates proved essential. Pilot-plant tests of the electrostatic separation equipment gave a recovery of 99 per cent on alluvial concentrates. An electrostatic separator unit, capable of treating one ton of diamondiferous concentrates per hour is under construction at the Consolidated Diamond Mining plant in Namaqualand and was expected to be put in daily operation early in 1951. It might also result in the reopening of the diamond deposits at Elizabeth's Bay, near Luderitz.

INDUSTRIAL DIAMONDS

Developments during 1950 in the field of industrial diamonds centred chiefly on the greatly increased use for defence requirements, and on the resultant short supply. These factors have brought about a sharp rise in prices.

World production of industrial diamonds in 1950 was approximately 12,500,000 ct., an increase of about 15 per cent over 1949. Of this amount some 9,600,000 ct. were mined in the Belgian Congo. Reopening of the Premier mine in South Africa should materially increase the supply of high grade industrials.

Total imports, into the U.S., of all classifications of industrial diamonds in 1950 were 10,967,005 ct. an increase of 72 per cent by weight and 100 per cent in value over the 1949 figures. The U.S. continued to purchase industrial diamonds of all classifications for the stockpile but the quantity purchased was not made public.

The cost of all classes of industrial diamonds increased materially during 1950, the average price for 1950 imports being $3.23 per ct. as compared to $2.77 per ct. for 1949.

The manufacture of diamond grinding wheels continued to be the largest consumer of crushing boart in the U.S. and demand for these wheels has expanded due to increased use of cemented-carbide tools. Increased use of diamond grinding wheels may also be attributed to their use for glass grinding and concrete cutting. Diamond grinding wheels have been improved and are now available in vitrified, metal and resin bonds.

Increased demand for wires of fine diameters during 1950 stimulated production of diamond wire drawing dies in the U.S. and increased by over 100 per cent their import, chiefly from France and the Netherlands.

Improvements in the manufacture of diamond bit heads for oil field drilling, and improvements in drilling technique, have led to lower costs per ft. drilled, hence to an increased use of industrial diamonds for this purpose.

The principal use of whole, sound industrial stones continued to be for diamond dressing and truing tools. New methods have been developed for automatically controlling the area of contact between diamond and wheel. Indexing devices by which a new diamond face is presented to the wheel following each dressing has permitted maintenance of correct angles and edges on the diamond. The result has been longer diamond life and improved surface of the dressed wheel. The use of diamond powder expanded during the year, because of increased demand for rapid finish with a high polish of metal parts.

Canada imported in 1950 industrial diamonds amounting to 1,147,426 ct. valued at $5,888,861 or $5.13 per ct. In 1949, the corresponding figures were 808,070 ct., $3,757,886 and $4.65 per ct. By weight this is 141.9 per cent of the 1949 imports and 156.7 per cent by value. 866,169 ct., or 75.5 per cent of the total industrial diamond imports were from the United States.

SCIENTIFIC RESEARCH

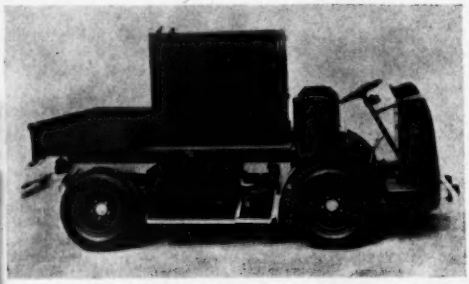
Research on diamonds was carried out by the Johannesburg Diamond Research Laboratory, sponsored and supported by the Industrial Distributors (1946) Ltd. The Chemical Section investigated heavy media products and matrices for drill bits and grinding wheels. The Cutting and Polishing Section continued to carry out investigations into improvements in the cutting industry. In the Drilling Section studies were made of a number of variables in drilling, while the Engineering Section assisted users of industrial diamonds to improve their product. The Metallurgical Section is building plant scale units for leading diamond producers for both the electrostatic separator process and the treatment of diamonds with a surface active agent to render them water repellent and therefore capable of adhering to a grease surface. Studies in the Physical Section included those on the nature of colour impurities and inclusions, the absorption properties of diamonds, modifications in the crushing of diamonds to improve particle shape, and investigation of Type I and Type II diamonds.

Among the papers published during the year on diamond research, the following are of special interest: "Recovery of diamonds by electrostatic separation," by A. A. Linari-Linholm (*Jour. Chem. Met. Min. Soc. South Africa*, October, 1950); "The infra-red properties of diamond, silicon and germanium," by E. Burstein and J. J. Oberly (*Phys. Rev.*, v. 78, p. 642, June, 1950); "On the nature of the opal-like outer layer of coated diamonds," by J. F. H. Custers (*Am. Mineral*, v. 35, pp. 51-58, 1950).

MACHINERY AND EQUIPMENT

Battery Electrics in Mineral Ore Production

An interesting application of battery operated electric vehicles to mineral ore mining is represented by two battery electric trucks which were supplied in August, 1951, by Smith's Electric Vehicles, Ltd., to the United Steel Companies Ltd. (Ore Mining Branch), through the agency of B. Shipside Ltd.



The N.C.B. Electric Explosive Truck as supplied to the United Steel Companies

These trucks, which are in operation at the Dragonby Mine, Scunthorpe, are an explosive truck, used to carry explosives from the magazine on the surface of the mine to the face of the headings, together with sand for stemming, and a scaling car, which is fitted with a telescopic tower for testing the room of headings up to 18 ft. high and also for scaling any loose stone which requires trimming off the roof. The car is also used for setting girders up to 20 ft. long at that height, and in the hanging and erecting of cables. In addition, the scaling car carries a transit magazine for explosives similar to that on the other truck.

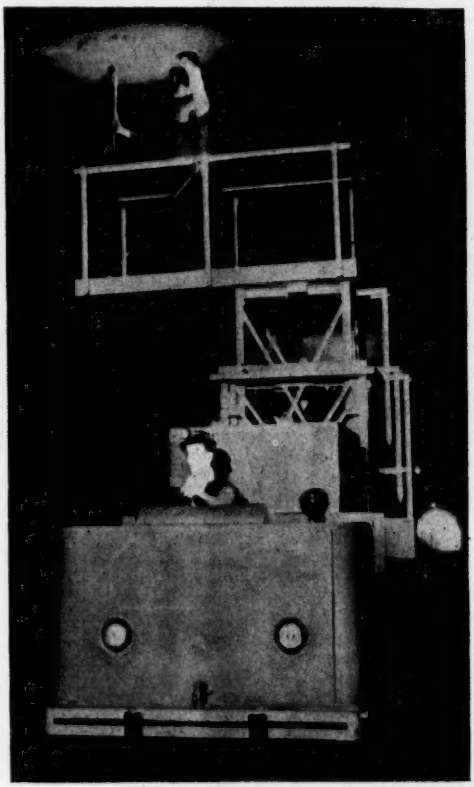
The two trucks, as illustrated, are modified models of the N.C.B. Electric 30 cwt. and 2 ton battery electric chassis and were built to the specification of the United Steel Companies. The Eagle Engineering Co., Ltd., supplied the power-operated tower on the 2 ton chassis, and the vehicles and their equipment complied with the requirements of H.M. Inspector of Mines.

To meet the special needs of underground working, the trucks are designed for a maximum speed of 4 m.p.h. and are equipped with quickly removable batteries for shift working, one additional battery being supplied with each vehicle. The spare batteries are charged while the trucks are in operation and exchanged with those on the trucks when required. Battery changing is carried out by means of a hand operated elevating platform truck. Protection for the battery crates against damage by stones and the handling to which they are subjected is provided by steel sheeting fitted on the hardwood crates. The cabinet housing the controller in the front of the driving cabs is enclosed against dripping of water, and further protection is provided for this and the instrument panel by a cowl. Towing jaws, suitable for chains or ropes, are also fitted at both the front and rear of the trucks. The lighting equipment comprises two headlamps, two rear lamps and an automatic reversing lamp.

To limit the speed to the stipulated 4 miles per hour, the number of cells in the traction batteries has been reduced from the normal 36 to 18, and additionally, the standard B.T.H. solenoid contactor parallel series controller has been arranged to operate normally in the "Batteries-parallel" position.

For the United Steel trucks, the full parallel-series controller is retained, but the high speed (Batteries-series) push button has been isolated by a secret key-operated switch located in the controller cabinet. In service, the driver uses only the foot pedal to drive the truck at its rated speed of 4 m.p.h., the battery halves then being connected in parallel. Three automatic accelerating steps are provided in the controller from rest up to this speed. If required, operation of the secret key switch will enable the high speed push button to be used, which then connects the battery halves in series and approximately doubles the vehicle speed.

The transit magazines carried on the vehicles, are conconstructed of ¼ in. welded steel, with lifting lugs and clamps to secure the containers to the platform bodies, and are lined with 1 in. hardwood divided into compartments for the cartons of explosive. The complete interiors, including the doors, one on either side of the magazine, are felt lined. All nails, screws, hinges, locks, etc., used in their construction are of brass, as also are the keys, to eliminate danger of explosion. A sheet of ¼ in. thick armoured asbestos is fitted to the platform body on which the magazines stand as a precaution against fire or transmitted heat from the chassis or wiring in the event of



The N.C.B. 2-ton Scaling Car in Operation

an electrical fault. On the 30-cwt. chassis, used as the explosive truck, the supply of sand for stemming is carried in a hardwood-sided container.

The 2-ton truck, in addition to a magazine, carries the Eagle power-operated telescopic tower, which is mounted on a sub-frame directly over the rear axle. The tower has a closed height of 9 ft., extends to 14 ft., and is fitted with a revolving platform. Power-operation is derived from a 2 h.p. 36 v. motor, located under the driver's seat and chaincoupled to an oil pump for operating the hydraulic ram on the tower.

G.E.C. Activities in 1951

During 1951 the General Electric Co. continued to supply the mining industry, both at home and abroad, with an appreciable amount of mining equipment.

Among the many orders received for turbo-alternators and compressors was one from Harmony Gold, for a turbo-compressor and from the Vryheid Colliery and Blomfontein for turbo-alternators. While most of the G.E.C.'s switchgear was supplied during the past year to electrical utilities in various parts of the world, the company supplied the coke preparation plant of the N.C.B. at Nantgarw Colliery in South Wales with a 15 unit, 4-tier cubicle type contactor board for motor control.

An impressive variety of mining equipment was supplied during the year to mining companies at home and abroad. Rand Mines have a 60 kW rectifier on order and are also waiting delivery of a geared double drum winder which is in the course of erection. An export order G.E.C. recently completed was for a copper-nickel convertor for the Rustenburg Platinum Mines. This was a duplicate of a previous one supplied in 1937 and included driving motors and very accurate control gear.

Other parts of the Empire to which G.E.C. exported mining equipment included Uganda, Northern Rhodesia and Australia. For the Uganda Electricity Board at Kampala, G.E.C. built, at its Erith Works, a Wetherill magnetic separator of the laboratory type, which will be used for examining a range of feebly magnetic minerals. Mufulira Copper Mines in Northern Rhodesia ordered a 64-in. suspension type separator magnet; while eight motor-generators are on order for G. A. Brown and Abermain Seeham Collieries Ltd., New South Wales, Australia.

As in previous years, G.E.C. made an important contribution in plant and equipment to the coal mining industry. The company undertook the conversion to electric drive of an existing steam winder at Chanters Colliery, Manchester, and has in hand a contract, also for the N.C.B., for three electric winders, two of which are geared drum winders, the third being a geared Koepe winder for Bold Colliery.

The company has a new gate-end box under development conforming to the specifications of the N.C.B., which is for the direct-to-line starting of coal cutter and conveyor motors at the coal face. In fact, it is the first of a series of units designed to line up together and form a switchboard.

Another item of equipment which G.E.C. has successfully exported abroad is its hammermill and a series of Pennsylvania granulator, or ring type, hammermills is being built for crushing coal for the boiler plant of the Electricity Supply Commission of South Africa. Four of these mills, each of which has a capacity of 350 s.tons per hour are for the South Rand Colliery and two are for the Cornelia Colliery, while a further two mills, each having a capacity of 315 s.tons an hour, are being built for the Vierfontein Power Station.

Developments in Exploratory Drilling for Uranium Ore

New developments in diamond and dry-hole drilling in the large exploratory programme now under way on the Colorado Plateau are described in a paper on "New Developments in Exploratory Drilling for Uranium Ore," presented by Mr. R. G. Sullivan (Vice-President, Minerals Engineering Company, Grand Junction, Colorado), at the 1951 American Mining Congress. The author states that as diamond drilling tends to get deeper, new practices are required to hold cost within reason. He adds that dry-hole exploratory equipment has been developed as an answer to exploring shallow areas, and that further new methods foretell more expansive use of this type of drill. Mr. Sullivan also reveals that the present rate of dry-hole drilling of 1,080,000 ft. per year is expected to more than double in 1952. However, diamond drill footage, now at a yearly rate of approximately 1,550,000 ft., is not expected to increase in the same proportion. New problems brought on by deeper drilling have stimulated the trial of new tools and methods as an auxiliary to diamond drill coring.

These developments should be watched carefully by the mining industry, as a whole, as a drilling programme of the scope now in progress will lead to developments that can be used elsewhere.

K. & B.—Sweet Eluvial Concentrator

Attention has for some time been devoted to the development and production of dry concentrating equipment by Knapp & Bates Ltd., Ore Dressing Engineers. One of these machines, which makes use of very low pressure air for producing fluidity instead of water, is the K. & B. Sweet Eluvial Concentrator for the treatment of eluvial or alluvial deposits for the pre-concentration of the heavy minerals, such as gold, cassiterite, wolfram, etc., where there is insufficient, or even no water, for sluicing or dredging operations.

The K. & B. Sweet Eluvial Concentrator

The machine illustrated is one of the latest types with automatic discharge of concentrate. Such machines are in practical operation in French West Africa and are stated to be giving good results on tin concentration.

In order to determine the recoverable values by this method, the above firm makes a prospecting unit, with removable tray and operated by a small petrol engine, which is small enough to be manhandled to the various prospecting pits. In this way, a reliable valuation of an area can be made.

METALS, MINERALS AND ALLOYS

Although the threat of a steel strike in the U.S. has been postponed, it has by no means been averted. Instead of striking on New Year's Day, the steel workers agreed to the dispute being placed before the Wage Stabilization Board. Meanwhile the U.S. economy has been threatened by a strike of almost equal importance; workers producing about 70 per cent of the U.S. aluminium had decided to strike this week-end, but Mr. Truman has referred the matter to the Wages Stabilization Board. This action has averted the immediate danger, but the potential trouble is still as great. The two disputes have much in common: the United Steel Workers' Union covers a large proportion of the workers in the two industries: demands for higher wages are common. Yet the two disputes are separate and successful agreements must be concluded in both negotiations, if the American economy is not to be subjected to intense strains.

In order to facilitate the pricing of export orders by manufacturers, the Ministry of Materials has arranged that orders for copper, lead and zinc may now be placed on the Directorate of Non-Ferrous Metals by telegram, provided they are confirmed by letter. All telegrams handed in at the Post Office by 2 p.m. will be fixed at the price ruling on that day.

COPPER.—Despite official denials that the price of copper scrap in the U.S. would be raised, the flow of scrap to the mills has been curtailed. In an effort to restore that flow, Mr. Charles Wilson, Mobilization Director, made an emphatic denial that the domestic price of newly-mined copper would be lifted from 24½c. per lb. to the world price of 27½c. In this statement, he also made it clear that scrap prices would not to be altered. Meanwhile copper supplies continue critically short with no prospect of relief. U.S. copper allocations for February are to be cut 11 per cent from January level.

The U.S. Government will, according to Washington reports, soon give information regarding a second special price contract for copper. The first, reported here last week, concerned the Calumet and Hecla Consolidated Copper Co. The later contract will, if the reports are justified, provide for the payment of 25½c. per lb. The amount covered by the contract is said to be 246,000 tons from the White Pine Copper Co., a subsidiary of the Copper Range Co. The operating company received a loan from R.F.C. last November to bring the mine into production.

D.P.A. hopes that the U.S. will receive from Canada 15,800 s.tons more copper in the current year than in 1951. This will be a sizeable increase, since the U.S. imported last year from Canada 63,300 tons of copper and copper base alloy products, including 1,000 tons of copper for processing under toll agreement.

Yugoslavia has decided, according to reports from Vienna, to export its copper in the form of semi-manufactures rather than as ore or crude copper. To achieve this object, a rolling mill at Titovo Uzice is being expanded to a capacity of 24,000 tons per annum of semi-manufactured goods. The Yugoslavs are also reported to be attaching great importance to the copper deposits at Majdanpek in Serbia. This field is believed to be even larger than the Bor field, which has stood the Yugoslavs in good stead for a large number of years.

LEAD.—The U.S. Office of Price Stabilization sanctioned an increase of 2c. per lb. in the ceiling price of the lead content of domestic ore and concentrates. This alteration reflects the increase of a similar amount given in October for domestic primary lead.

The resumption of stockpiling of lead is believed to be under consideration in Washington.

The American Bureau of Metal Statistics estimates that there has been little change in the shipments to domestic consumers of refined lead in 1951. The Bureau calculates that the total for 1951 was 496,184 tons against 499,637 in 1950. Production of 486,874 tons was the smallest since 1946; the 1950 output was 571,763 tons.

The Mexican price of lead, f.o.b. Monterey, continues to fall: the average last week was only 19.02c. per lb., against 19.45c. the previous week and 19.80c. a fortnight earlier. Mexican exports of lead in 1951 at 145,000 tonnes showed a decline from the 1950 figure of 261,000 tonnes. 92,000 tonnes of last year's shipments went to Europe and the rest to the U.S.

The Ministry of Materials price for imported pig lead has been cut to-day from £175 to £170 d/d.

TIN.—After the excitement of last week concerning tin, it is not surprising that there should be little to report on this metal. One point of agreement has been made clearer; if the U.S. pays another supplier a price higher than $1.18, plus any adjustment to make the prices comparable, the U.K. will receive a higher price which will be applicable only to the quantities not then declared available for shipment by the U.K. It would appear that benefits to this country from any higher prices will be restricted by the speed with which agreements are negotiated with other producers. The talks with Indonesia are due to commence next week with Mr. Symington still acting for R.F.C.; Mr. Dean Acheson, U.S. Secretary of State, is reported to be more hopeful that negotiations can be re-opened with Bolivia for a new tin contract. Just how late the R.F.C. has left the resumption of buying is shown by reports that the U.S. stockpile may now have to be drawn on to tide over the period until foreign shipments begin arriving again.

Malayan producers are said to have been assured that all purchases of Malayan tin in connection with the Anglo-American agreement will be made through the free market.

ZINC.—The U.S. Office of Price Stabilization has authorized an increase of 2c. per lb. in the price of zinc content of domestic ore and concentrates. The change is similar to that announced this week concerning lead.

The Defence Production Administration has announced that it hopes to import from Canada an additional 31,700 tons of zinc during the current year. This would bring imports from Canada up to 184,000 tons. U.S. traders are expressing some surprise that this announcement should come at a time when the domestic zinc position is easing appreciably.

ASBESTOS.—*Asbestos* of Philadelphia reports that asbestos fibre prices are being increased by approximately 15 per cent in the upper grades and 10 per cent in the lower. Since large quantities of asbestos textiles are required for equipment being produced under the defence programme, it is believed that the heavy demand, currently experienced, will continue through 1952. The outlook for brake linings is encouraging, but price is an important factor in the bus and truck field, where a price war is practically in effect. The demand for asbestos paper and asbestos millboard is now well below production capacity. Buying of asbestos cement products is expected to be slow during the winter months, since dealers and distributors will not stock so heavily as last winter; the spring demand should be good.

The Canadian asbestos industry, already responsible for three-quarters of the world's fibre, is rapidly expanding. The largest of these projects is that of Canadian Johns-Manville, at Asbestos, Quebec; about $14,000,000 is to be spent on a new mill to replace existing facilities at the Jeffrey mine. The Asbestos Corporation is undertaking the development of a vast new ore deposit at Vimy Ridge, Quebec. When the work is completed in two or three years' time at a cost of approximately $10,000,000 the plant will produce 5,000 tons of asbestos per day. The United Asbestos Corporation has plans to develop its Black Lake property on a basis of 5,000 tons daily.

Mutual Security Agency, Special Mission for Economic Co-operation, has made arrangements to lend £103,000 for the exploration, development and production of asbestos in Southern Rhodesia. The contract was signed with Associated Asbestos Mines and associated groups.

NICKEL.—The Manganese-Nickel-Cobalt Committee of the International Materials Conference has run into further troubles. Earlier this year the committee was forced to issue interim allocations for nickel because the formation of a long term plan had been frustrated by certain countries delaying sending replies to a questionnaire. The new trouble arises because it has been found that certain governments have

included statistics relating to secondary material, and even semi-manufactured goods in the returns relating to consumption. In an effort to issue the promised allocations by the end of January the committee stopped its consideration of the cobalt problem.

About 1,500 s.tons of nickel is to be switched from the U.S. stockpile and will go instead to industry. The period covered by this diversion is three months. It is thought that the heavy requirements of nickel for jet engines will take about one-half of the total involved.

SULPHUR.—Hitherto the International Materials Committee has allocated supplies of sulphur on a quarterly basis; it has just announced the allotments for the first half of 1952. Although the total for all countries for that period has been increased to 2,953,000 tons from 2,883,000 tons (the aggregate of the last two quarters of 1951), the United Kingdom's share has dropped to 194,900 tons, against 208,600 tons. The United States (including Canada) on the other hand has had its allocation stepped up to 2,226,000 tons from 2,148,500 tons. The committee estimated that the requirements of sulphur in the whole of 1952 would amount to 7,364,100 tons, and that production would reach 5,825,100 tons.

TITANIUM.—E. I. du Pont de Nemours & Co. in announcing that the daily rate of production of titanium is 1½ tons per day and that during 1952 it is expected to reach 2½ tons, points out that the first commercial production of ductile metal was started as recently as 1948. Output was then in the region of 50 lb. per day.

The London Metal Market

(From Our Metal Exchange Correspondent)

At the end of last week the tin price once more touched the £1,000 per ton mark, around which level it has remained although the turnover has declined, possibly due to the Chinese holidays at the beginning of the week.

One of the passages in the recent U.K./U.S. tin agreement sets out the Governments' desire that "more normal arrangements for the conduct of this trade should be established as soon as possible," and it is felt in trade circles that the politicians are still not clear on recent tin history. Very briefly, the sequence of events was that the price of tin started to rise during the middle of 1950 owing to American stockpile buying and the outbreak of the Korean war. The rise gathered momentum in the early days of 1951 as American stockpile buying became almost indiscriminate: this buying was brought to a sudden standstill through action by the Government department which had itself been the chief cause of the price rise. Although the price fell considerably it did not fall to the level the American Government expected, nor was there any difficulty in disposing of production outside the States, as both government and consumers of other countries had been starved of metal during the American buying wave, and were utilizing the opportunity of re-stocking.

The behaviour of the market under very difficult circumstances has been such as to prove that the best and most orderly way of conducting the tin trade is through the open markets in London and Singapore, with the American import being left in the hands of those private firms which have been in the trade for many years. The open markets are in existence, whilst the reinstatement of private trading in the U.S. can only be brought about by American action, and it is sincerely hoped that this will be done and that notice will be given as soon as possible, so that even if trade cannot revert to normal channels before the expiry of the present agreement, at least the firms involved will know that they are coming back into business and will therefore retain all the necessary manpower and machinery.

On Thursday the official close on the tin market was: Settlement price £987 10s., Cash Buyers £987 10s., Sellers £990; Three months' Buyers £986, Sellers £987 10s. In the afternoon the market was irregular. Turnover for the day was 210 tons. Approximate turnover for the week was 995 tons.

The Eastern price on Thursday morning was equivalent to £990 10s. per ton, c.i.f. Europe.

Iron and Steel

On the brink of various momentous changes in the iron and steel industry it is scarcely surprising that the market this week has been almost in a state of suspense. In the first place makers and merchants have little or nothing to sell. Commitments exceed productive capacity and after this weekend deliveries can only be made under appropriate authorizations. Moreover, the Ministry of Supply may at any moment impose a steep rise in prices. It is not the custom to give notice of any such advance which may become immediately operative. And furthermore, there is the prospect in the near future that Parliament will be called upon to negative the Steel Act which transferred the principal producing plants to State ownership.

It is probable that the scarcity of steel will be most acute during the next two or three months. Thereafter shipments of American steel should be arriving in substantial quantities and more generous allocations may be possible. It is significant also that there was a marked expansion of steel imports from Western Europe in December. Bigger tonnages of steel semis from France, Belgium and Luxembourg were especially welcome to re-rollers whose operations have been sadly handicapped by the lack of billets, sheet bars and slabs.

Imports of iron ore are also maintained at such a high level that in spite of the severe curtailment in the first half of 1951 the total tonnage received last year was 400,000 tons better than in 1950. This inspires confidence that the attainment of the blast furnacemen's target of 1,000,000 extra tons of pig iron this year will not be jeopardized by any lack of iron ore.

JANUARY 31 PRICES

COPPER

Electrolytic	£227 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid	£170 0 0 d/d
Soft empire, including secondary lead	£170 0 0 d/d
English lead	£171 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid	£190 0 0 d/d
G.O.B. spelter, domestic	£190 0 0 d/d
Electrolytic and refined zinc	£194 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£365 per ton
Crude (70%)	£290 per ton
Ore (60% basis)	45/50s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade)	£454 per ton

OTHER METALS

Aluminium, £148 per ton.	Palladium, £8 10s. oz.
Bismuth, 28s. lb.	Platinum (scrap), £33.
Cadmium, 18s. 9d. lb.	Platinum, £27/33 5s. nom.
Chromium, 6s. 3d. lb.	Rhodium, £45 oz.
Cobalt, 20s. lb.	Ruthenium, £30 oz.
Gold, 248s. f.oz.	Quicksilver, £73 10s./£74 ex-warehouse.
Iridium, £65 oz. nom.	Selenium, 25s. nom. per lb.
Magnesium, 2s. 10½d. lb.	Silver (bar), 77d. f.oz. spot and forward.
Osmiridium, £35 oz. nom.	Tellurium, 19s. lb.
Osmium, £70 oz. nom.	

ORES, ALLOYS, ETC.

Bismuth	65% 18s. 3d. lb. c.i.f. 60% 17s. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 per ton c.i.f.
,, ,, (concentrates)	£13 per ton c.i.f.
,, ,, Refractory	£12 12s. per ton c.i.f.
Baluchistan Metallurgical	£14 16s. per ton c.i.f.
Magnesite, ground calcined	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Molybdenite (85% basis)	103s. 1½d. per unit c.i.f.
Wolfram (65%), U.K.	485s. nom. c.i.f.
Tungsten Metal Powder (for steel manufacture)	35s. nom. per lb. (home)
Ferro-tungsten	33s. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 3s. 9d. d/d per ton
Ferro-manganese, home	£41 8s. 2d. per ton
Brass Wire	2s. 7½d. per lb. basis.
Brass Tubes, solid drawn	2s. 1d. per lb. basis.

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

During the past week markets, like the weather, have blown alternately hot and cold but with a pronounced bias towards the cold. This was only to be expected while awaiting Mr. Butler's speech on Tuesday. *Now that we are out of the* waiting room and into the dentist's chair, some confidence has *been recovered and on Wednesday prices were generally firmer* all round. The volume of business, however, remained quiet.

It is difficult at this stage to assess comprehensively the effect *of the proposals since the bulk of the financial changes will* not be made until the Budget. The date of this has been advanced to March 4 and it seems probable that until then *markets will remain in a state of considerable uncertainty.*

One blow to British companies will be the increased exports of heavy machinery which will slow up the modernization of equipment. It is too early to state how great an effect this will have on the mining industry.

Oil shares were one of the firmest sections in the market. Prior to the Chancellor's speech, prices had fallen away and showed only slight recovery on the conciliatory speech made *by the Persian Prime Minister. The fact that the Government* do not propose to re-introduce petrol rationing helped to strengthen the market.

There was a better trend in Kaffirs. The Union Government propose to assist the sterling area as much as possible and it *is thought that they may be prepared to issue a new gold* loan to the United Kingdom. Mr. Havenga's speech was optimistically received in Johannesburg where it raised hopes *of some reduction in taxation of mines by alteration of the* existing formulae. Springs were better on the scope offered for grade raising by their reserve position.

In the O.F.S. Group St. Helena fell 1s. 4½d. following market rumours of a new capital issue. These were later confirmed. The company are to offer existing shareholders one new share at 16s. for every four held. The balance of 250,000 shares will be taken up by the finance houses concerned. Wiluna announced that a first cash distribution of 7s. 6d. per share will be made about February 11. This was rather more than the market had anticipated and the shares hardened, standing *currently at 5s. 9d. ex repayment. If the Chairman's estimate* of the total liquidation distribution proves to be correct, there should be another 6s. 4½d. to come.

In the miscellaneous section, St. John del Rey improved following the more optimistic view taken on the recent Brazilian Government decree.

The copper market recovered earlier losses with Tanks in the lead. Messina Transvaal fell 5/16ths following rumours *of an impending new issue at 85s. a share. Informed market* circles consider this unlikely but do not discount the possibility of some form of bonus issue to capitalize reserves. The *Copper Co. is to transfer control and management to India.* Treasury permission has been granted. Over 80 per cent of the capital is held in India.

Reports from New York suggest that the United States may renew purchases of lead for stockpiling purposes after a lapse of nearly two years. Buyers came in for Barriers. Earlier losses were in some cases wiped out and small gains recorded.

A further warning of the difficult position in which Canadian *gold producers may find themselves came from an official* spokesman of the Kirkland Lake Mine in Ontario. It is estimated that the price of gold has dropped by as much as *$3.50 per oz. since the freeing of the Canadian dollar and the* disappearance of the premium price against the United States dollar. Canadian shares generally remained firm. International Nickel picked up nearly $2 in late dealings on Wednesday.

The Cape has displayed much interest in the possibilities of asbestos shares. While these are not quoted in the list below, many companies mine their ore in the Union. The statistical position here is considered to be especially strong and demand *is likely to be sustained as this is one of the chief heat resisting* materials used in the development of atomic energy.

	Price Jan. 30	+ or − on week
FINANCE		
African & European	3	−½
Anglo American Corpn.	7¾	−⅛
Anglo-French	21/3	−3d
Anglo Transvaal Consol.	32/6	−2/6
Camp Bird	12/1½	−1½d
Central Mining (£1 shrs.)	37/6	−1/3
Consolidated Goldfields	48/1¼	+7½d
Consol. Mines Selection	30/-	−7½d
East Rand Consols	3/3	
General Mining	4⅝	
H.E. Prop.	36/10½	−10½d
Henderson's Transvaal	12/6	−1/6
Johnnies	3⅛	−⅛
Rand Mines	6	−⅛
Rand Selection	44/4½	−1/3
Union Corporation	9½	−¼
Vereeniging Estates	4¼	−⅛
Wits	31/10½	−7½d
West Wits	44/4½	−7½d
RAND GOLD		
Bivvoors	42/3	−1/-
Brakpan	18/-	
City Deep	45/-	−7½d
Consol. Main Reef	40/-	+1/3
Crown	3⅜	
Daggas	3¼	−⅛
Dominion Reefs	2/3	−1½d
Doornfontein	24/9	−9d
Durban Deep	3⅛	¼
E. Daggas (4/- units)	21/3	−7½d
E. Geduld	46/3	−7½d
E. Rand Props	3⅜	−⅛
Geduld	6⅛	−⅛
Grootvlei	32/6	−9d
Libanon	13/7½	
Luipaards Vlei	17/3	−3d
Marievale	20/7½	−10½d
Modderfontein B	5/-	−4½d
Modderfontein East	30/-	−1/3
New Kleinfontein	31/10½	−1/3
New Pioneer	16/9	−6d
Randfontein	17/10½	+10½d
Robinson Deep	12/6	−6d
Rose Deep	32/6	
Simmer & Jack	6/3	
Springs	9/-	+9d
Sub Nigel	2⅛	
Van Dyk	14/9	+6d
Venterspost	22/6	−3d
Vlakfontein	17/-	−3d
Vogelstruishuit	26/6	−6d
West Driefontein	6⅛	−⅛
W. Rand Consolidated	45/-	−1/10½
Western Reefs	40/-	−7½d
O.F.S.		
Alpha F.S.A.	8/-	−9d
Blinkpoort	20/-	
Central Mining F.S.	4/3	−1½d
Freddies	8/7½	−1½d
Freddies N.	8/6	−1½d
Freddies S.	9/6	−4½d
F.S. Geduld	3⅜	+⅛
Geofries	21/6	−1/-
Harmony	23/3	−3d
Lydenburg Estates	10/9	−6d
Middle Wits	20/-	−6d
Ofsits	41/10½	+7½d
President Brand	18/-	−4½d
President Steyn	15/9	−7½d
St. Helena	20/6	−1/4½
U.F.S.C. & G.	8/3	−3d
Virginia Deb.	7/3	
Virginia Ord.	11/10½	−4½d
Welkom	35/-	−1/3
Western Holdings (New)	3	−⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/10½	
Ariston	6/6	−1½d
Ashanti	24/6	−9d
Bibiani	8/6	
Bremang	2/10½	
G.C. Main Reef	3/4½	−1½d
G.C. Selection Trust	7/3	
Konongo	3/3	
Kwahu	4/3	
London & African Mng.	1/9	
Lyndhurst Deep	1/3	−1½d
Marlu	1/7½	
Nanwa	6d	
Taquah & Abosso	5/3	−1½d
AUSTRALIAN GOLD		
Boulder Perseverance	2/7½xd	−4½d
Gold Mines of Kalgoorlie	11/9	+3d
Great Boulder Prop.	6/-	−6d
Great Western Consol.	5/9	−3d
Lake View and Star	18/9	
Mount Morgan	17/6	−3d
North Kalgurli	15/-	
Paringa	6d	−1½d
Sons of Gwalia	10/-	
South Kalgurli	8/6	
Western Mining	7/3	−1½d
Wiluna	5/9	−7/3
	ex. repayment of 7/6	
MISCELLANEOUS GOLD		
Cam and Motor	36/3	
Champion Reef	8/6	−3d
Falcon Mines	9/-	−3d
Globe & Phoenix	24/-	

	Price Jan. 30	+ or − on week
MISCELLANEOUS GOLD (contd)		
G.F. Rhodesian	7/-	
London & Rhodesian	5/3	−3d
Bisichi	2/-	−3d
Mysore	5/-	
New Guinea	1/7½	+1½d
Nundydroog	6/6	
Ooregum	3/-	
Oroville	12/6	−9d
St. John d'El Rey	33/3	+9d
Zams	41/-	−9d
DIAMONDS		
Anglo American Inv.	5½	−¼
Casts	35/3	+3d
Cons. Diam. of S.W.A.	4¼	
De Beers Defd. Bearer	74/9	−1/3
De Beers Pfd. Bearer	14¼	+⅛
COPPER		
Chartered	69/-	−1/3
Indian Copper	4/-	
Messina	5⅛	−⅛
Nchanga	9⅜	−⅛
Rhod. Anglo-American	70/3	−4½d
Rhodesian Selection	21/9xd	−1½d
Rhokana	25⅞	
Rio Tinto	24	−1
Roan Antelope	14/9	
Selection Trust	46/10½	−2/1½
Tanks	67/6	+2/3
Tharsis Sulphur Br.	52/6	+1/3
TIN (Eastern)		
Anglo-Burma	3/-	+3d
Ayer Hitam	28/6	−6d
Bangrin	10/7½	+6d
Gopeng	16/1½	−4½d
Hongkong	10/6	−9d
Kamunting	26/9	−1½d
Kepong Dredging	10/3	−1½d
Kinta Tin Mines	17/3	−1½d
Kramat Pulai	4/9	+3d
Malayan Dredging	24/3	−9d
Pahang	18/1½	−6d
Pengkalen	12/6	−1½d
Petaling	17/3	+4½d
Rambutan	16/10½	
Siamese Tin	25/3	−4½d
Southern Kinta	17/6	+3d
S. Malayan	29/6	−6d
S. Tronoh	20/3	−6d
Sungei Kinta	23/1½	
Tekka Taiping	11/3xd	−9d
Tronoh	30/3	−1/-
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	11/-	
Beralt Tin	25/9	−1/-
Bisichi	4/7½	
British Tin Inv.	19/7½	−1½d
Ex-Lands Nigeria	6/10½	+1½d
Geevor Tin	16/3xd	
Gold & Base Metal	4/1½	−3d
Jantar Nigeria	7/7½	
Jos Tin Area	11/3	
Kaduna Prospectors	1/3	
Kaduna Syndicate	6/-	
London Tin	6/4½	−1½d
Ribon Valley	1/3	−1½d
United Tin	3/1½	−1½d
SILVER, LEAD, ZINC		
Broken Hill South	54/3	+1/-
Burma Corporation	3/6	−4½d
Consol. Zinc	31/-	−6d
Lake George	22/6	+6d
Mount Isa	42/-	−9d
New Broken Hill	25/9	+6d
North Broken Hill	69/3	−9d
Rhodesian Broken Hill	20/7½	−4½d
San Francisco Mines	32/-	−1/6
Trepca	3/6	−1½d
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	50/-	−1/3
Associated Manganese	56/-	−6d
Chinese Engineering	4/4½	
C.P. Manganese	52/6	−6d
Natal Navigation	4½	−¼
Wankie	17/10½	−7½d
Witbank Colliery	2⅞	
CANADIAN MINES		
Dome	$30	
Hudson Bay Mining	$124	
International Nickel	$87¼	−$1¼
Mining Corpn. of Canada	£6¾	−⅛
Noranda	$151	+$5
Quemont	£9	
OIL		
Anglo-Iranian	5¾	
Apex	48/1½	−1/3
Attock	24/6	+1½d
Burmah	61/10½	
Canadian Eagle Bearer	32/6	−1/3
Mexican Eagle	23/10½	+7½d
Shell	4⅜	−⅛
Trinidad Leasehold	30/9	−1/3
T.P.D.	32/-	−1/1½
Ultramar	36/6	−7½d

COMPANY NEWS AND VIEWS

Fresh Capital for St. Helena

St. Helena Gold Mines has announced a proposed issue of 2,125,000 shares of 10s. each at 16s. per share, of which 1,875,000 will be offered to shareholders by way of "rights," in the ratio of one new share for every four shares held, and 250,000 shares will be subscribed for by the companies associated with the formation of St. Helena. The proposed issue is subject to Treasury permission being obtained for the U.K. portion of the issue.

The offer to shareholders will be underwritten for a cash commission of 2½ per cent by Union Corporation, Anglo American Corporation of South Africa, Central Mining & Investment Corporation and New Consolidated Gold Fields.

In order to carry out these proposals, the company proposes to increase its authorized capital by £1,000,000 to £5,000,000, by the creation of 2,000,000 new shares of 10s. each, of which 375,000 will be held in reserve. These resolutions will be submitted to shareholders at an extraordinary general meeting to be held in Johannesburg on February 21.

The £1,700,000 fresh Funds which the new share issue will yield is required to carry out "excess development work," to cover capital expenditure at the mine and to repay the temporary loan of £1,000,000 from the Union Corporation, which is callable at three months' notice.

The official announcement lays stress on the recent setbacks experienced at the mine—including the encountering of a large strike fault and water troubles, which have put the development work a year behind. It is, however, the opinion of the Union Corporation, in their capacity as the company's consulting engineers, that the mine has every chance of becoming a successful gold producer as soon as its present setbacks have been overcome. The ore reserve position at December 31, last, amounted to 625,000 tons, averaging 5.9 dwt., over an estimating sloping width of 48 in., equivalent to 283 in.-dwt.

At the current market price of 20s. 6d. for the existing shares of St. Helena, the "rights" to the proposed new issue would be worth just under 11d. per share.

Rhodesian Asbestos, Ltd.

The directors of Anglo-Huronian have announced that they have acquired an 11¼ per cent interest in a new company, Rhodesian Asbestos, Ltd., which is being formed to acquire, explore and bring into production, if justified, certain asbestos properties in Southern Rhodesia. The main properties, so far purchased or under option, are in the Mashaba district some 165 miles south of Salisbury and 120 miles east of Bulawayo. The properties are known as the Temeraire, Shashi and Shamala and up to the end of 1951 over $1,000,000 had been expended in acquiring and developing certain of these properties by the Patino interests and the British Metal Corporation. Total ore reserves to a depth of 200 ft., based on surface trenching, diamond drilling and underground exploration on the three properties is estimated at 10,600,000 tons containing 501,600 tons fibre of all grades having an average market value of over £60 per ton. Rhodesian Asbestos also owns a large area of asbestos bearing serpentine formations in an area known as Darwendale, situated some 40 miles west of Salisbury, where asbestos outcrops have been traced over a length of several thousand feet and though the quality of this asbestos fibre, where exposed, is good, nothing as yet is known as to the continuity of the veins either in length or in depth.

The table below shows the respective interests of the participating companies in Rhodesian Asbestos:

Johns-Manville Corporation, New York, U.S.A.	51 per cent
The British Metal Corporation Ltd., London	15 per cent
Simon I. Patino, Suc. Paris, France	11¼ per cent
Southern Minerals & Marketing Corporation (Pty.) Ltd., Johannesburg, South Africa ...	11¼ per cent
Anglo-Huronian, Ltd., Toronto, Canada ...	11¼ per cent

The authorized capital of the new company will be 5,000,000 shares without nominal or par value and the price at which the shares will be taken up, as operating funds are required, will be $U.S.1.60 per share. The Patino interests, British Metal Corporation, and Southern Minerals will receive in consideration for expenditures made prior to December 31, 1951, shares at the same value of $U.S.1.60 per share.

The shares of Rhodesian Asbestos Ltd. will be listed on one or more recognized stock exchanges when a decision has been reached regarding production. The headquarters of the company will be in Toronto, Ontario, Canada.

Alpine (Barberton) has Disappointing Year

During the first three months of the year ended June 30, 1951, Alpine (Barberton) showed adequate monthly surpluses. But thereafter, while costs continued to rise, the company was unable to maintain the grade of ore milled due to the limitation on the amount of ore that could be raised from the richer stopes at the deeper levels.

Year to June 30	Milled	Yield	Development Results: Recovery Value	Total Advanced	Total Payable	Ore Reserves
	(tons)	(oz.)	(dwt.)	(ft.)	(ft.)	(tons)
1951	32,750	7,536	4·59	3,350	1,957	51,430
1950	29,150	7,738	5·31	2,513	946	47,482

This resulted in a decline in output as well as in the average grade recovered. The gold revenue, however, rose by £5,415 to £96,250 owing to the benefit of the higher gold price being operative for the full year, yet working expenses including development charges, more than absorbed this improvment being higher by £16,921 at £89,751. Thus after providing £3,356 (£3,901) for expenses and £3,157 (£4,450) for depreciation the profit for the year dwindled to a mere £111 as against £9,776 previously.

The outlook for the current year does not appear to be too bright. The chairman, Mr. A. H. M. Wedderburn, in his statement to shareholders states that the current year's operating results are likely to remain meagre and not more than sufficient to enable the mine to hold its own during the critical months ahead.

United Tin Areas' Profitable Investments

Shortage of labour and adverse weather conditions were the chief factors responsible for the decline in output of tin concentrates by 14 tons to 96 tons of United Tin Areas of Nigeria for the year ended June 30, 1951.

Year to June 30	Output Tin Conc. (tons)	* Cost per ton Tin Metal £	Average Price per ton Tin Metal £ s. d.	†Tin Proceeds £	Ore Reserves (tons)
1951	96	675	1,092 0 0	78,765	275
1950	110.7	494	675 18 4	56,008	340

* Including transport, freight and royalty charges.
† Includes £1,633 received from sale of 5¼ tons columbite.

However, the small drop in production was more than offset by the company's ability to take full advantage of the high prices ruling for tin, the average price per ton tin metal being £1,092, compared with £676 per ton during the previous year. Thus the tin revenue of £78,765 not only enabled the higher working costs and realization charges to be absorbed, but was also enough to leave the company with a working surplus of £23,087, an increase of £13,023 over the preceding year. The improved earnings attracted a higher tax, but this did not prevent the company stepping up its dividends from 7½ per cent to 10 per cent. The distribution required £7,876 and after providing £2,114 for interest waived there remained £13,497 to be carried forward against £13,935 brought in.

Year to June 30	Gross Revenue £	Working Profit £	Tax £	Net Profit £	Dividend %	Carry Forward £
1951	78,883	23,087	13,535	10,552	10	13,497
1950	57,435	13,023	4,805	8,218	7½	13,935

The chairman, Mr. A. Hedley Williams, in his statement to shareholders mentioned the company's interest in the explora-

tion and development programme being carried out by the American Smelting and Refining Co. in the Nigerian lead-zinc areas and said that the programme was proceeding energetically, and that negotiations with the Nigerian Government for the granting of a Lease on special terms appeared to be nearing a successful conclusion. Of particular importance was the chairman's reference to the company's investments which have increased substantially. This is accounted for by the repayment of loans, recorded in last year's balance sheet at £41,514, in exchange for fully paid shares of Mines Development Syndicate (West Africa) and the company's large interest in the Esperanza Copper and Sulphur Co., respectively. At June 30, 1951, the book value of the company's investments stood at £55,170 compared with £7,198 previously. However, this advance was dwarfed by the increase in their market value from £2,703 at June 30, 1950, to no less than £114,468 at the date of the latest balance sheet.

Anglo-Burma Earns More

A preliminary statement from the Anglo-Burma Tin Co. giving financial results for the year ended May 31, 1951 has now been published. It may be recalled that the company, due to the disturbed conditions in Burma, were unable to present their reports and accounts during 1951 but it is now announced that the report and accounts will be posted to shareholders on February 18 next and that the annual meeting will be held in London on March 12.

Gross revenue for the year ended May 31, 1951, improved from £135,125 to £167,978. Expenses in Burma and London were, however, higher at £106,668 (£81,544) and after making provision for this expenditure, allocating £14,333 (£16,357) for depreciation, paying out a total of £5,108 (£6,315) on its 4 per cent Prior Lien Debenture Stock and 6 per cent Registered Debentures and meeting tax liabilities of £27,334 (£20,150), net profit was £14,535 against £10,759 previously. The sum of £15,000 (nil) was transferred from taxation reserves of previous years which enabled an allocation of £25,000 (nil) to be made to general reserve leaving £4,972 to be carried forward against £437 brought in.

Company Shorts

Rhokana Obtains Johannesburg Quotation.—Rhokana Corporation announces that the Johannesburg Stock Exchange has granted a quotation in the ordinary stock of the Corporation's capital. A Branch Register has been opened at the offices of Anglo American Corporation of South Africa Ltd., 44 Main Street, Johannesburg. The necessary forms for the removal of stock from the principal to the branch Register at Johannesburg are obtainable at the London office of Anglo American Corporation of South Africa Ltd., 11, Old Jewry, London, E.C.2.

Indian Copper to Emigrate to India.—The U.K. Treasury has given permission to the Indian Copper Corporation to transfer its seat of control and management to India, the directors of the corporation stated in a circular issued on Wednesday of this week.

The corporation's decision to transfer its domicile to India comes as something of a surprise, as no prior intimation of this move was known in this country. However, it is understood that about 80 per cent of the corporation's capital is held in India.

Nigel Van Ryn Maintains Dividend.—The working profit of Nigel Van Ryn Reefs for the year ended September 30, 1951, amounted to £24,044 against £8,125 in the preceding year. From the £33,852 (£28,062) available, the single dividend payment of 5 per cent (same) absorbed £7,431, the sum of £10,000 (nil) was allocated to general reserve and after providing £7,992 (£10,469) for depreciation of quoted investments and taking into account all other appropriations, the carry forward was reduced to £7,973, against £9,808.

Major Sir Cyril F. Enthwistle is chairman. The annual meeting will be held in London on March 27.

East Rand Proprietary.—East Rand Proprietary Mines have announced that it is prepared to issue new sheets of coupons (Nos. 66/97) in exchange for talons detached from share warrants to bearer.

The talons should be listed on the forms provided for the purpose and surrendered either at the London office of the Company, 4, London Wall Buildings, E.C.2 or at the Crédit Lyonnais, 19, Boulevard des Italiens, Paris, in exchange for which the sheets of new coupons will be issued free of charge from those offices. The sheets of new Coupons can only be forwarded by post at the request and risk of the depositors of the talons, and to such addresses as they may direct. Listing forms may be obtained on application at either of the offices referred to above.

U.S. Government Finances Uriwira.—The U.S. Government has agreed to advance $U.S.1,640,000 to Uriwira Minerals in order to finance the installation by January 1, 1954, of a production mill to deal with 1,000 tons of ore daily, at the company's Mpanda lead mine in Tanganyika.

In this connection, Uriwira Minerals also announced that subscriptions are concurrently being procured at par for £250,000 5 per cent Unsecured Loan Stock, the nominal amount of which may be converted at any time into ordinary shares at par, and is redeemable not later than December 31, 1961, at a premium of 10 per cent. This stock issue does not involve any increase in the company's authorized capital.

Further particulars will be given in a circular to be issued to shareholders within the next few days.

Wankie Colliery's Proposed Move.—Wankie Colliery has announced that it will convene an extraordinary meeting on February 19, to consider new articles of association and other matters in connection with the proposed transfer of its management and control to Southern Rhodesia. The resolutions will not, however, be submitted if the approval of the U.K. Treasury has not been received by the date of the meeting.

It is intended that Mr. Robert Foot, the company's present chairman, should continue to act as executive chairman with his own residence and domicile in Southern Rhodesia. Mr. Lechmere-Oertel will also reside in Southern Rhodesia and remain on the board, but all the other directors will, when the new articles come into force, retire from office and Col. Sir Ellis Robins and the Hon. Humphrey V. Gibbs, both of whom are resident in Southern Rhodesia, will join the board.

The management contract will be taken over, as from the date of transfer, by a new subsidiary company of Powell Duffryn now in course of formation in Southern Rhodesia and to be called Powell Duffryn (Southern Rhodesia). Wankie Colliery shares will continue to be quoted on the London Stock Exchange, it is stated, and dividends will be paid in London through paying agents.

Northern Rhodesia Mineral Production Sept.-Oct., 1951.—During September, Northern Rhodesia produced the following minerals: Cobalt alloy (38.12 per cent Co), 2,133 cwt.; copper (blister), 19,155 tons; copper (electrolytic), 7,140 tons; lead, 1,200 tons; manganese ore (42.8 per cent Mn), 120 tons; tin concentrates, 0.98 ton; vanadium pentoxide, 18.44 tons; zinc, 1,870 tons; limestone, 18,371 tons; mica (sheet), 1,669 lb.; phyllite, 1,150 tons. In the first nine months of 1951, Northern Rhodesian mineral production was provisionally valued at £50,361,504, compared with £34,168,746 for the corresponding period of 1950.

During October, N. Rhodesia's production was as follows: Cobalt alloy (38.23% Co.), 3,731 cwt., copper (blister), 20,680 tons; copper concentrates (19.56% Cu), 37 tons; copper (electrolytic), 9,852 tons; lead, 1,200 tons; manganese ore (44% Mn), 67 tons; tin concentrates, 0.55 ton; vanadium pentoxide, 18.71 tons; zinc, 1,925 tons; limestone, 18,248 tons; mica (sheet), 924 lb.; phyllite, 964 tons; silica rock, 268 tons.

JOS TIN AREA (NIGERIA), LTD.

The Forty-First Ordinary General Meeting of Jos Tin Area (Nigeria) Ltd., was held at 7, Warwick Court, Holborn, W.C.1 on Wednesday last.

The following is an extract from the Statement by the Chairman, **Mr. A. Stanley Williams, M.I.M.M.**

You will, I think, agree that the accounts for the year show a very satisfactory state of affairs. The profit for the year amounted to £83,042 against £51,191 for the previous twelve months. Our Investment Income rose by £4,000 but, apart from this, the whole of the increased profit is due to the abnormal and temporary high price of tin metal, and was achieved in spite of a smaller amount of tin concentrate sold, viz. 167¼ tons against 190¼ tons, and sharply rising costs—both of mining and Royalty paid to the Government.

The continued rise in costs, large due to increased payments and benefits to native employees, is disturbing. Much of this is necessitated by, and in consequence of, general inflationary tendencies in Nigeria but, unfortunately, it seems as though additional benefits are, in too many cases, accompanied by less effort on the part of the recipients. Should there be any material fall in the price of tin metal, these inflated costs will bear seriously on the Company.

The scale of Royalty, payable to the Government on tin ore won, has been stepped up heavily during the year and it is felt that this has been done without regard to the effect of greatly increased mining costs. This will be specially felt if, and when, the price of the metal falls. Urgent representations have been made by the Nigerian Chamber of Mines and alternative suggestions for more realistic scales put forward but, whilst the Government evidently feels that, in the event of a sharp fall in metal price, some revision of the Royalty scale will be necessary, there seems little prospect of any immediate action being taken.

Last year I pointed out, as I have so frequently done, that our mining areas are largely exhausted and whilst output may rise for a month or two, as residual patches of value are found, the trend of production is definitely downwards.

Our quoted investments, at the 31st July, 1951, stood in the books at £221,273 with a market valuation then of £291,859, an Appreciation of £70,586 or 31.9 per cent over the book value.

The Directors recommend the payment of a dividend of 15 per cent and, in view of the exceptionally good year, a bonus of 5 per cent, making a total of 20 per cent less tax.

The report and accounts were adopted.

Mining Men

Mr. Julian Amery has been elected a director of the British South Africa Co.

Mr. Gordon R. Ball has been appointed to the board of International Nickel.

Mr. F. A. Crew has resigned from the board of Consolidated Zinc Corporation.

Mr. A. W. Durrant, formerly secretary of Rhokana Corporation and Nchanga Consolidated Copper Mines, has been appointed a director of The British Metal Corporation. This appointment follows the Agency agreement recently announced between Nchanga Consolidated Copper Mines and Rhokana Corporation, and the British Metal Corporation, under which the latter company was appointed as agents of these companies for the sale of copper throughout the world with the exception of Belgium, France, Switzerland, Northern Rhodesia, Southern Rhodesia and the Union of South Africa.

The death is announced of **Mr. Raymond C. Gaugler,** president of the American Cyanamid Co.

Before joining the Cyanamid Organization, he was with the United States Aluminum Co. in New Kensington, Pa., and The Northern Aluminum Co., Shawinigan Falls, Canada. Mr. Gaugler, who had been with Cyanamid since 1917, served as Assistant Treasurer and Comptroller, before becoming Treasurer and a director in 1929. In 1939, he became Vice-President in charge of Finance and in 1947, Executive Vice-President. He was elected President on January 5, 1951, in succession to the late Mr. W. B. Bell.

Mr. S. G. Menell has resigned from the boards of Blyvooruitzitcht Gold Mining and Union Free State Coal and Gold and **Mr. I. Shaffer** has joined the boards of these two companies.

Mr. W. S. Robinson has tendered has resignation as president of Consolidated Zinc Corporation and its main subsidiaries and of New Broken Hill Consolidated, in which Broken Hill Corporation, a wholly owned subsidiary of Consolidated Zinc Corporation, has a 32 per cent interest.

Mr. I. Shaffer and **Mr. I. Hayman** have joined the board of Harmony Gold Mining in place of **Mr. S. G. Menell** and **Mr. B. L. Bernstein,** who have resigned.

Metal and Mineral Trades

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